JVC

SERVICE MANUAL

COLOR TELEVISION

AV-28R47SK,
AV-32R47SK

BASIC CHASSIS
JW

InteriArt

DOLBY SURROUND PRO LOGIC II

T-V LINK

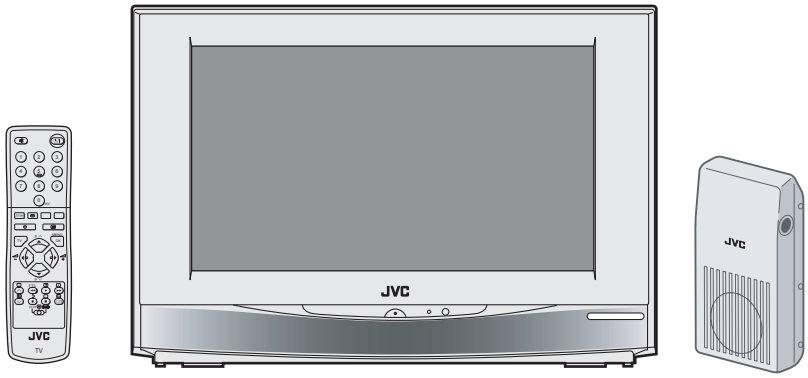


TABLE OF CONTENTS

1 PRECAUTION 1-3
2 SPECIFIC SERVICE INSTRUCTIONS 1-4
3 DISASSEMBLY 1-6
4 ADJUSTMENT 1-13
5 TROUBLE SHOOTING 1-28

COPYRIGHT © 2004 VICTOR COMPANY OF JAPAN, LIMITED

No.YA061
2004/3

SPECIFICATION

Items		Contents	
		AV-28R47SK	AV-32R47SK
Dimensions (W × H × D)		76.2cm × 52.8cm × 49.3cm	86.4cm × 58.7cm × 55.0cm
Mass		39.0kg	53.0kg
TV RF System		CCIR (I)	
Colour System		PAL NTSC3.58 / NTSC4.43 (Only EXT mode)	
Stereo System		NICAM (I)	
Receiving Frequency	UHF	470MHz - 862MHz	
Intermediate Frequency	VIF SIF	38.9MHz (I) 32.9MHz (6.0MHz :I)	
Colour Sub Carrier Frequency	PAL NTSC	4.43MHz 3.58MHz / 4.43MHz	
Teletext System		FLOF (Fastext level 2.5) WST(Standard system)	
Power Input		AC 220V~AC240V, 50Hz	
Power Consumption		115W Standby : 2.7W	
Picture Tube		Visible size : 66cm [measured diagonally] (H : 58.3cm × V : 33.0cm)	Visible size : 76cm [measured diagonally] (H : 67.4cm × V : 38.4cm)
High Voltage		31.0kV (+1kV / -1.5kV) (at zero beam current)	
Speaker		MAIN : 6.5cm × 13cm oval type × 2 CENTER : 4cm × 16cm oval type × 1	
Audio Power Output		MAIN : 10W + 10W CENTER : 10W	
Aerial Input Terminal		75 Ω unbalanced, coaxial	
EXT-1 / EXT-2 / EXT-3 (Input / Output)		21-pin Euro connector (SCART socket × 3)	
EXT-4	Video Audio	1V(p-p) positive, negative sync provided, 75Ω, RCA pin jack × 1 500mV(rms) (-4dBs), high impedance, RCA pin jack × 2	
Audio Out (variable)		0 - 1000V(rms), low impedance, RCA pin jack × 2	
Surround Rear Terminal		7.5W + 7.5W, 8 Ω	
Headphone Jack		Stereo mini jack, Ø3.5mm × 1	
Remote Control Unit		RM-C1502-1C (AA/R6 dry cell battery × 2)	
Woofer Unit	Dimensions (W × H × D)	19.2cm × 38.8cm × 11.1cm	
	Mass	2kg	
	Speaker	13cm round type × 1	
	Audio Power Output	18W	

Design & specifications are subject to change without notice.

This product is manufactured under license from Dolby Laboratories Licensing Corporation.
"Dolby" and the double-D symbol DD are trademarks of Dolby Laboratories Licensing Corporation.

SECTION 1
PRECAUTION

1.1 SAFETY PRECAUTIONS

(1) The design of this product contains special hardware and many circuits and components specially for safety purposes. For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Service should be performed by qualified personnel only.

(2) Alterations of the design or circuitry of the product should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacturer of responsibility for personal injury or property damage resulting therefrom.

(3) Many electrical and mechanical parts in the product have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessary be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the Parts List of Service Manual. Electrical components having such features are identified by shading on the schematics and by (⚠) on the Parts List in the Service Manual. The use of a substitute replacement which does not have the same safety characteristics as the recommended replacement part shown in the Parts List of Service Manual may cause shock, fire, or other hazards.

(4) The leads in the products are routed and dressed with ties, clamps, tubing's, barriers and the like to be separated from live parts, high temperature parts, moving parts and / or sharp edges for the prevention of electric shock and fire hazard. When service is required, the original lead routing and dress should be observed, and it should be confirmed that they have been returned to normal, after re-assembling.

WARNING

(1) The equipment has been designed and manufactured to meet international safety standards.
(2) It is the legal responsibility of the repairer to ensure that these safety standards are maintained.
(3) Repairs must be made in accordance with the relevant safety standards.
(4) It is essential that safety critical components are replaced by approved parts.
(5) If mains voltage selector is provided, check setting for local voltage.

SECTION 2
SPECIFIC SERVICE INSTRUCTIONS

2.1 FEATURES

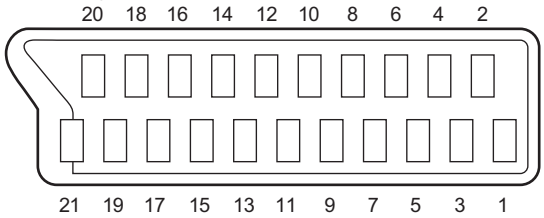
- New chassis design enable use of an interactive on screen control.
- The TELETEXT SYSTEM has a built-in FASTEXT (UK system) and WST (world standard system) system.
- Because this TV unit corresponds to multiplex broadcast, users can enjoy music programs and sporting events with live realism. In addition, BILINGUAL programs can be heard in their original language.
- Users can make VCR dubbing of picture and sound by controlling the AV selector to select an optional source at the EXT-2 output.

2.2 21-pin Euro connector (SCART) : EXT-1/EXT-2/EXT-3

Pin No.	Signal designation	Matching value	EXT-1	EXT-2	EXT-3
1	AUDIO R output	500mV(rms) (Nominal), Low impedance	Used (TV OUT)	Used (LINE OUT)	Not used
2	AUDIO R input	500mV(rms) (Nominal), High impedance	Used (R1)	Used (R2)	Used (R3)
3	AUDIO L output	500mV(rms) (Nominal), Low impedance	Used (TV OUT)	Used (LINE OUT)	Not used
4	AUDIO GND		Used	Used	Used
5	GND (B)		Used	Used	Used
6	AUDIO L input	500mV(rms) (Nominal), High impedance	Used (L1)	Used (L2)	Used (L3)
7	B input	$700mV_{(B-W)}$, 75Ω	Used	Used	Not used
8	FUNCTION SW (SLOW SW)	Low : 0V-3V High : 8V-12V, High impedance	Used	Used	Used
9	GND (G)		Used	Used	Used
10	SCL / T-V LINK		Not used	Used (SCL2 / TV-LINK)	Not used
11	G input	$700mV_{(B-W)}$, 75Ω	Used	Used	Not used
12	SDA		Not used	Used (SDA2)	Not used
13	GND (R)		Used	Used	Used
14	GND (YS)		Used	Not used	Not used
15	R / C input	R : $700mV_{(B-W)}$, 75Ω C : $300mV_{(P-P)}$, 75Ω	Used (R)	Used (C2/R)	Used (C3)
16	Ys input (FAST SW)	Low : 0V-0.4V, High : 1V-3V, 75Ω	Used	Used	Not used
17	GND (VIDEO output)		Used	Used	Used
18	GND (VIDEO input)		Used	Used	Used
19	VIDEO output	$1V_{(P-P)}$ (Negative sync), 75Ω	Used (TV OUT)	Used (LINE OUT)	Not used
20	VIDEO / Y input	$1V_{(P-P)}$ (Negative sync), 75Ω	Used	Used	Used
21	COMMON GND		Used	Used	Used

(P-P= Peak to Peak, B-W= Blanking to white peak)

[Pin assignment]



2.3 MAIN DIFFERENCE LIST

Item	AV-28R47SK	AV-32R47SK
PICTURE TILT	NO	YES

2.4 TECHNINAL INFORMATION

2.4.1 MAIN MI-COM (CPU) PIN FUNCTION

Pin No.	Pin name	I/O	Function	Pin No.	Pin name	I/O	Function
1	VssP2	--	GND	65	SVM	O	Scan velocity modulation
2	VssC4	--	GND	66	FbiSo	I	H pulse (Flyback pulse)
3	V1.8C4	I	1.8V	67	Hout	O	H drive
4	V3.3A3	I	3.3V	68	VssComb	--	GND
5	VrefP_Sdac	I	3.3V	69	V5Comb	I	5V for comb filter
6	VrefN_Sdac	--	GND	70	Vin/R2/Pr	I	EXT-1 Y
7	VrefP_Sdac	I	3.3V	71	Uin/B2/Pb	I	EXT-1 B-Y
8	VrefN_Sdac	--	GND	72	Yin/G2/Y	I	EXT-1 R-Y
9	VrefP_Sdac	I	3.3V	73	Ysync	I	Y for SyncSep
10	XtalIn	I	System clock(4MHz)	74	Yout	O	Y(for 73pin)
11	XtalOut	O	System clock(4MHz)	75	Uout/INSSW2	I	Ys(for EXT-1 Y/R-Y/B-Y insertion)
12	VssA1	--	GND	76	Vout/Swo1	--	NC
13	Vguard	I	CRT NECK protection	77	INSSW3	I	Ys(for EXT-2 Y/R-Y/B-Y insertion)
14	DecDig	--	1.8V	78	R3/Pr	I	EXT-2 R-Y
15	V5P1	I	5V	79	G3/Y	I	EXT-2 Y
16	Phi2	--	Not used	80	B3/Pb	I	EXT-2 B-Y
17	Phi1	--	Not used	81	Gnd3	--	GND
18	Gnd1	--	GND	82	V5P3	I	5V
19	SecPll	--	Not used	83	BCL	I	Auto Beam / contrast
20	Dec8G	--	Not used	84	BLKIN	I	Black current input (For Auto white balance)
21	Ewd/Avl	O	Parabola wave	85	Rout	O	Red (for CRT)
22	Vdb	O	V. Drive(-)	86	Gout	O	Green (for CRT)
23	Vda	O	V. Drive(+)(For side pin)	87	Bout	O	Blue (for CRT)
24	Vif1	I	IF	88	V3.3A1	I	3.3V
25	Vif2	I	IF	89	RefAdN	--	Not used
26	Vsc	--	Not used	90	V3.3RefAdP	--	Not used
27	Iref	--	Not used	91	RefAd	--	Not used
28	GndIF	--	GND	92	GndA	--	GND
29	Sif1	I	SIF	93	V1.8A	I	1.8V
30	Sif2	I	SIF	94	V3.3A2	I	3.3V
31	Agc	O	AGC	95	VssAD	--	GND
32	EHT	I	HV change control	96	V1.8ADC	I	1.8V
33	Ssif/RefIn/Avl/RefOut	O	L'/Other SW [L':H]	97	IntO	I	Remote control
34	AudoIn5L	I	Audio (Left)	98	P10/Int1	I	AV_LINK control
35	AudioIn5R	I	Audio (Right)	99	P11/TO	O	AV_LINK control
36	AudOutSL	O	Audio (Left)	100	V1.8C2	I	1.8V
37	AudOutSR	O	Audio (Right)	101	VssC2	--	GND
38	DecsDem	--	Not used	102	P04/I2SWs	O	I2S bus (WS) for DSP
39	QssO/AmO/AudeEm	--	Not used	103	P03/I2SClk	I	I2S bus (clock) for DAC
40	Gnd2	--	GND	104	P02/I2SDo2	I/O	I2S bus (Dout) for audio
41	Pllif	--	Not used	105	P01/I2SDo1	O	Reset for DAC
42	SifAgc	--	Not used	106	P00/I2SDI1	I	Head phone connection detection [Connect : L]
43	IfVo/FmRo/DvbO	O	Composite video detect	107	P13/T1	O	Main power control [ON : H]
44	FmRo/DvbO	--	Not used	108	SCL1	O	I2C bus (clock) for AV SW, TUNER, DOLBY, VOLUME
45	V8AudioSwitches	I	8V	109	SDA1	I/O	I2C bus (data) for AV SW, TUNER, DOLBY, VOLUME
46	AgcSsif	--	Not used	110	V3.3P	--	GND
47	V5P2	I	5V	111	P20/TPwm	O	ROTATION
48	SVO/IfVo/Cvbsl	--	Not used	112	P21/Pwm0	O	S-CORRECTION CONTROL(PANORAMIC)
49	Audio4InL	--	Not used	113	P22/Pwm1	O	Audio muting [Muting : L]
50	Audio4InR	--	Not used	114	P23/Pwm2	O	Audio muting [Muting : H]
51	Y4/Cvbs4	I	Composite video /Y	115	P30/Adc0	I	Protection detection for Low B short [Detect : H]
52	C4	I	Chroma	116	P31/Adc1	O	Lighting for POWER LED [ON : Soft RED]
53	Audio2InL	--	Not used	117	V1.8C1	I	1.8V
54	Audio2InR	--	Not used	118	DecV1V8	I	1.8V
55	Cvbs2/Y	--	Not used	119	P32/Adc2	I	Key scan front control
56	Audio3InL	--	Not used	120	P33/Adc3	I	AGC
57	Audio3InR	--	Not used	121	VssC1+P1	--	GND
58	Y3/Cvbs	--	Not used	122	P24/PW3	--	Not used
59	C3	--	Not used	123	P25/PWM4	O	RESET for MICOM
60	AudOutLsL	--	Not used	124	V1.8C3	I	1.8V
61	AudOutLsR	--	Not used	125	VssC3	--	GND
62	AudOutHpL	--	Not used	126	P12/Int2	I	Main power detection [ON:H]
63	AudOutHpR	--	Not used	127	P14/RX	I/O	I2C bus (data) for generally
64	CVBSO/PIP	--	Not used	128	P15/TX	O	I2C bus (clock) for generally

SECTION 3
DISASSEMBLY

3.1 DISASSEMBLY PROCEDURE

3.1.1 REMOVING THE REAR COVER

(1) Unplug the power cord.
(2) Remove the 13 screws **[A]** as shown in the Fig. 3.
(3) Withdraw the REAR COVER toward you.

3.1.2 REMOVING THE SIDE CONTROL JACK ASS'Y

• Remove the REAR COVER.
(1) Remove the 1 screw **[B]** as shown in the Fig. 3.
(2) Slightly shift the SIDE CONTROL JACK ASS'Y to rear side and remove the 2 claws under the SIDE CONTROL JACK ASS'Y.
(3) Disconnect the connector [CN810F] , [CN810F] and [CN810S] as shown Fig. 3.

3.1.3 REMOVING THE SIDE CONTROL PWB

• Remove the REAR COVER.
• Remove the SIDE CONTROL JACK ASSY.
(1) Remove the 2 screws **[C]** as shown in Fig. 3.
(2) Remove the 2 claws **[D]** from back side of the SIDE CONTRL JACK ASS'Y.
(3) Pull out the SIDE CONTROL PWB.

3.1.4 REMOVING THE CHASSIS

• Remove the REAR COVER.
(1) Slightly raise the both sides of the chassis by hand and remove the 2 claws under the both sides of the CHASSIS from the front cabinet.
(2) Withdraw the CHASSIS backward.
(If necessary, take off the wire clamp, connectors etc.)

3.1.5 REMOVING THE POWER & DEF. PWB

• Remove the REAR COVER.
• Remove the CHASSIS.
(1) Remove the 3 screws **[E]** as shown in Fig. 3.
(2) Remove the POWER & DEF. PWB upper.
(If necessary, take off the wire clamp, connectors etc.)

3.1.6 REMOVING THE AV TERMINAL BOARD

• Remove the REAR COVER.
(1) As first, expand the lever **[K]** with the SUB WOOFER connector, and pull it out of connector jack as shown in Fig. 2.
(2) Remove the 3 screws **[F]** as shown in the Fig. 3.
(3) Remove the 2 claws **[G]** under the CHASSIS as shown in Fig. 1.
(4) Remove the AV TERMINAL BOARD slightly in the direction of arrow **[H]** as shown in Fig. 1.

3.1.7 REMOVING THE SPEAKER GRIL

• Remove the REAR COVER.
(1) Remove the 8 screws **[J]** as show in Fig. 3.
(2) Remove the SPEAKER GRIL.

3.1.8 REMOVING THE MAIN SPEAKER

• Remove the REAR COVER.
(1) Remove the 2 screws **[L]** as show in Fig. 3.
(2) Remove the MAIN SPEAKER.
(3) Follow the same steps when removing the other hand MAIN SPEAKER.

3.1.9 REMOVING THE CENTER SPEAKER

• Remove the REAR COVER.
• Remove the CHASSIS.
(1) Remove the 4 screws **[M]** as show in Fig. 3.
(2) Remove the SIDE SPEAKER.

3.1.10 REMOVING THE SPACER

• Remove the REAR COVER
(1) Remove the 3 screws **[N]** as show in Fig. 3.
(2) Remove the SPACER.

3.1.11 CHECKING THE PW BOARD

• To check the back side of the PW Board.
(1) Pull out the CHASSIS. (Refer to REMOVING THE CHASSIS).
(2) Erect the CHASSIS vertically with the HVT side facing up so that you can easily check the back side of the PW board.

CAUTION:

• When erecting the CHASSIS, be careful so that there will be no contacting with other PW Board.
• Before turning on power, make sure that the wire connector is properly connected.
• When conducting a check with power supplied, be sure to confirm that the CRT EARTH WIRE (BRAIDED ASS'Y) is connected to the CRT SOCKET PW board.

3.1.12 WIRE CLAMPING AND CABLE TYING

(1) Be sure to clamp the wire.
(2) Never remove the cable tie used for tying the wires together. Should it be inadvertently removed, be sure to tie the wires with a new cable tie.

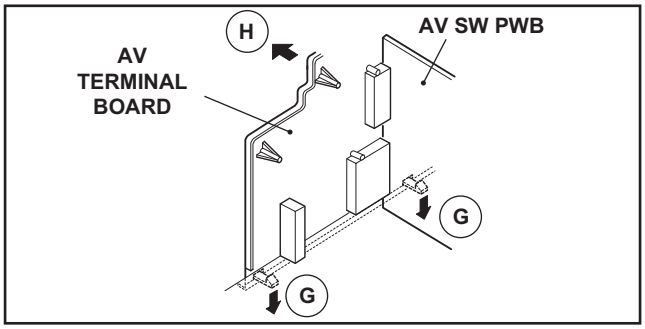


Fig.1

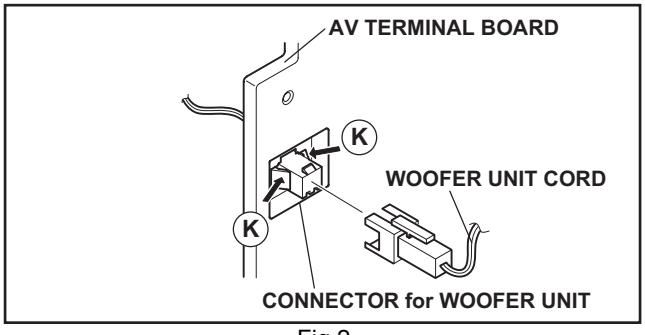


Fig.2

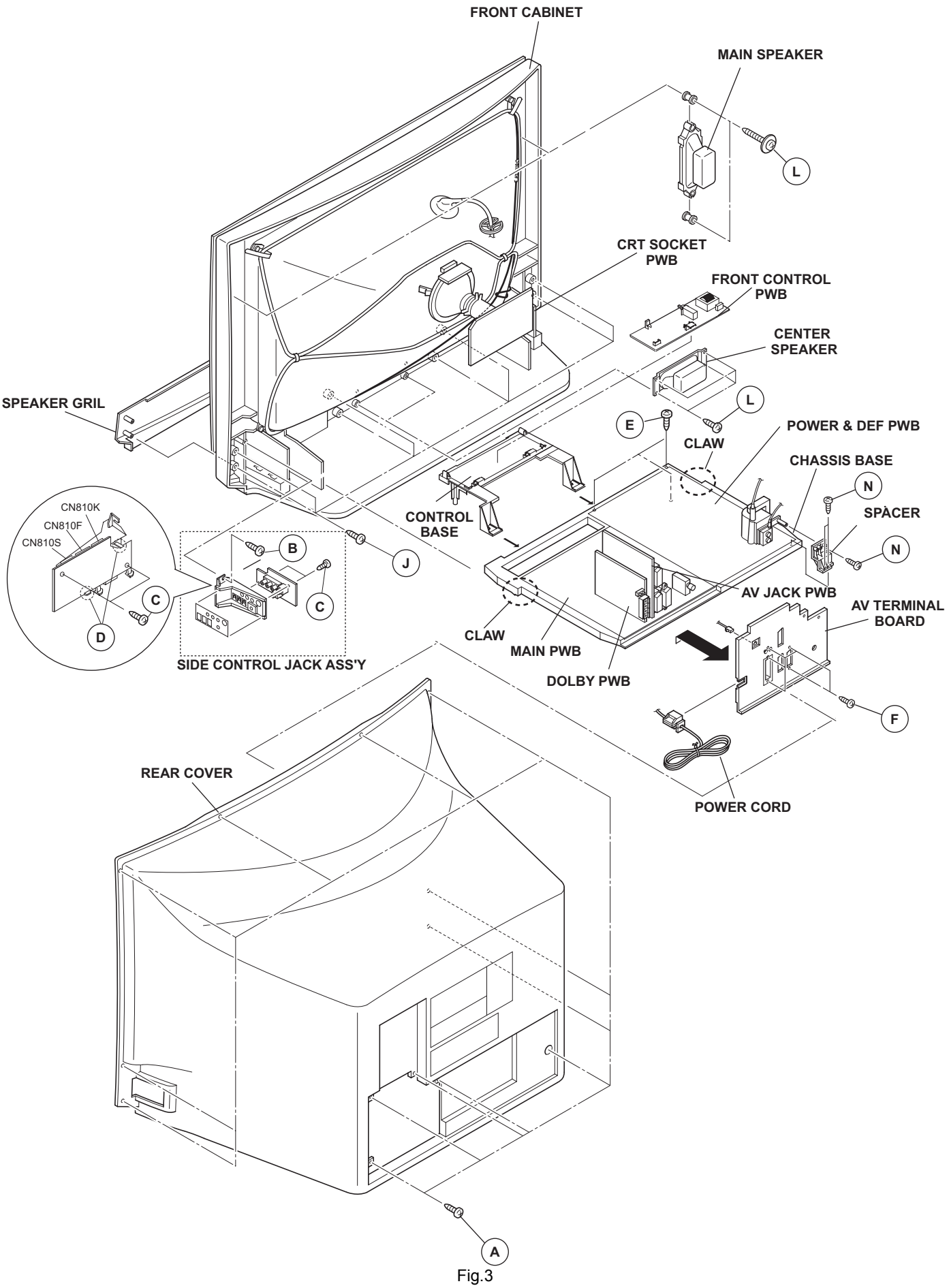

FRONT CABINET
MAIN SPEAKER
L
CRT SOCKET PWB
FRONT CONTROL PWB
CENTER SPEAKER
SPEAKER GRIL
L
E
POWER & DEF PWB
CLAW
CHASSIS BASE
N
SPACER
N
CONTROL BASE
CN810K
CN810F
CN810S
B
J
C
C
D
SIDE CONTROL JACK ASS'Y
AV JACK PWB
AV TERMINAL BOARD
CLAW
MAIN PWB
DOLBY PWB
F
POWER CORD
REAR COVER
A

Fig.3

3.1.13 REMOVING THE CRT

NOTE:

- Replacement of the CRT should be performed by 2 or more persons.
- After removing the REAR COVER, CHASSIS etc.,

(1) Putting the CRT change table on soft cloth, the CRT change table should also be covered with such soft cloth (shown in Fig. 4).

(2) While keeping the surface of CRT down, mount the TV set on the CRT change table balanced will as shown in Fig. 4.

(3) Remove 4 screws marked by arrows with a box type screwdriver as shown in Fig. 5.

NOTE:

Since the cabinet will drop when screws have been removed, be sure to support the cabinet with hands.

(4) After 4 screws have been removed, put the cabinet slowly on cloth (At this time, be carefully so as not to damage the front surface of the cabinet) shown in Fig. 6.

NOTE:

- The CRT should be assembled according to the opposite sequence of its dismounting steps.
- The CRT change table should preferably be smaller that the CRT surface, and its height be about 35cm.

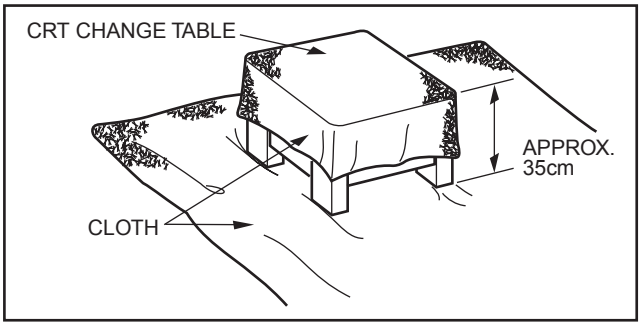


Fig.4

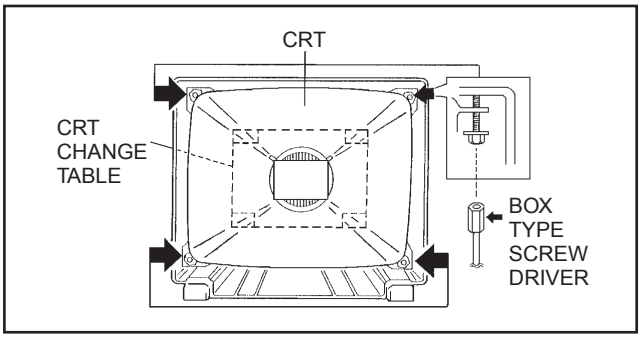


Fig.5

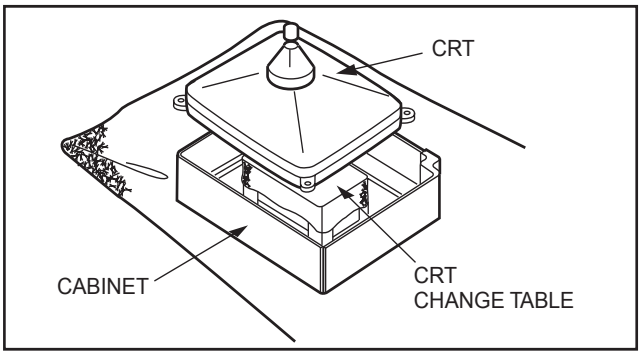


Fig.6

COATING OF SILICON GREASE FOR ELECTRICAL INSULATION ON THE CRT ANODE CAP SECTION.

Subsequent to replacement of the CRT and HV transformer or repair of the anode cap, etc. by dismounting them, be sure to coat silicon grease for electrical insulation as shown in Fig.7. Wipe around the anode button with clean and dry cloth. (Fig.7) Coat silicon grease on the section around the anode button. At this time, take care so that any silicon greases dose not sticks to the anode button. (Fig.8)

Silicon grease product No. KS - 650N

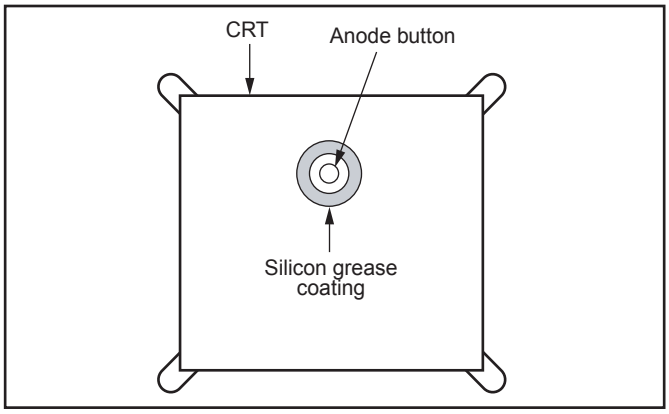


Fig.7

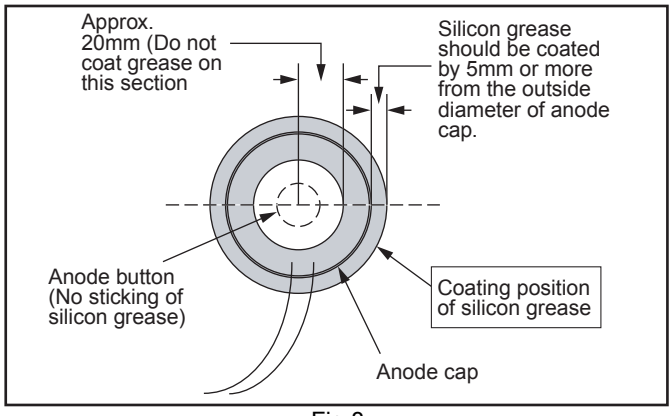


Fig.8

3.2 MEMORY IC REPLACEMENT

- This model uses the memory IC.
- This memory IC stores data for proper operation of the video and drive circuits.
- When replacing, be sure to use an IC containing this (initial value) data.

3.2.1 MEMORY IC REPLACEMENT PROCEDURE

1. Power off
Switch off the power and disconnect the power plug from the AC outlet.

2. Replace the memory IC
Be sure to use the memory IC written with the initial setting values.

3. Power on
Connect the power plug to the AC outlet and switch on the power.

4. System constant check and setting
* It must not adjust without signal.
(1) Press the [INFORMATION] key and the [MUTING] key of the REMOTE CONTROL UNIT simultaneously.
(2) The SERVICE MENU screen of Fig. 1 will be displayed.
(3) While the SERVICE MENU is displayed, press the [INFORMATION] key and [MUTING] key simultaneously, and the SYSTEM CONSTANT SET screen of Fig. 2 will be displayed.
(4) Refer to the "SYSTEM CONSTANT SET" , and check the setting items. Where these differ, select the addres with the [FUNCTION (UP/ DOWN)] key and adjust it with the [FUNCTION (RIGHT/ LEFT)] keys. (The letter of the selected item is displayed in yellow.)
(5) A setup will become effective if the main power is shut off.

5. Receiving channel setting
Refer to the OPERATING INSTRUCTIONS and set the receive channels (Channels Preset) as described.

6. User settings
Check the user setting items according to the given in page later.
Where these do not agree, refer to the OPERATING INSTRUCTIONS and set the items as described.

7. SERVICE MENU setting
Verify what to set in the SERVICE MENU, and set whatever is necessary (Fig.1). Refer to the SERVICE ADJUSTMENT for setting.

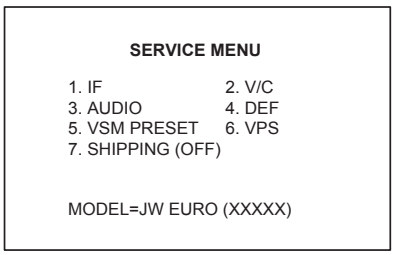
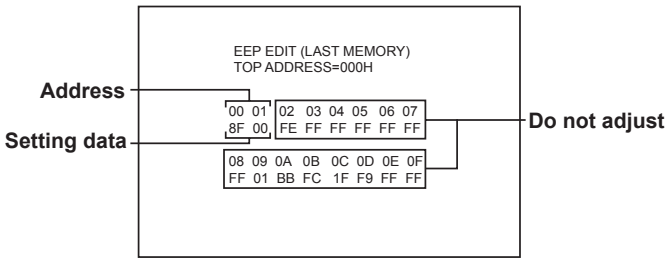


Fig.1


EEP EDIT (LAST MEMORY)
TOP ADDRESS=000H
Address
Setting data
00 01 02 03 04 05 06 07
8F 00 FE FF FF FF FF FF
08 09 0A 0B 0C 0D 0E 0F
FF 01 BB FC 1F F9 FF FF
Do not adjust
Fig.2

NAME OF REMOTE CONTROL KEY

Names of key	key
INFORMATION	
MUTING	
MENU	
FUNCTION UP/DOWN	
FUNCTION -/+	

3.2.2 SYSTEM CONSTANT SETTING

Address	Setting data	
	AV-28R47SK	AV-32R47SK
00	8F	9F
01	02	02

3.2.3 SETTINGS OF FACTORY SHIPMENT

3.2.3.1 BUTTON OPERATION

Setting item	Setting position
POWER	Off
CHANNEL	PR1
VOLUME	10

3.2.3.2 REMOTE CONTROL DIRECT OPERATION

Setting item	Setting position
CHANNEL	PR1
VOLUME	10
ZOOM	PANORAMIC
SURROUND	OFF

3.2.3.3 REMOTE CONTROL MENU OPERATION

(1) PICTURE

Setting item		Setting position
PICTURE MODE		STANDARD
CONTRAST / BRIGHT SHARP / COLOUR / HUE		Refer to [5. VSM PRESET]
COLOUR TEMP.		NORMAL
FEATURES		
AUTO VNR		AUTO
COLOUR SYSTEM	TV	PAL
	EXT	AUTO
4:3 AUTO ASPECT		PANORAMIC

(2) SOUND

Setting item		Setting position
STEREO / I•II		Stereo sound
BASS		Centre
TREBLE		Centre
BALANCE		Centre
SUROUND MODE		
DOLBY PRO LOGIC II	TV SPEAKER	L / C / R
	LEFT	MAX
	CENTRE	MAX
	RIGHT	MAX
	LS	MAX
	RS	MAX
	WOOFER	MAX
	DISTANCE	0 METERS

(3) FEATURES

Setting item	Setting position
SLEEP TIMER	OFF
BLUE BACK	ON
CHILD LOCK	Refer to OPERATION INSTRUCTIONS

(4) SET UP

Setting item		Setting position
AUTO PROGRAM		TV channel automatically set
EDIT/MANUAL		PRESET CH only
		The others : BLANK
LANGUAGE		ENGLISH
DECODER (EXT-2)		OFF
EXT SETTING	DUBBING	EXT-1 → EXT-2
PICTURE TILT		MIDDLE **[AV-32R47SK]**

3.2.4 SERVICE MENU SETING ITEMS

<table>
<tr><th>Setting item</th><th>Setting value</th><th>Setting item</th><th colspan="2">Setting value</th></tr>
<tr><td rowspan="2">1. IF</td><td rowspan="2">1. VCO
2. DELAY POINT</td><td rowspan="2">5. VSM PRESET</td><td>BRIGHT/SOFT/STD</td><td>COOL/WARM/NOMAL</td></tr>
<tr><td>1.BRIGHT
2.CONT.
3.COLOUR
4.SHARP
5.HUE</td><td>1. R DRIVE
2. G DRIVE
3. B DRIVE</td></tr>
<tr><td>2. V / C</td><td>1.SCREEN
2.CUTOFF R / G
3.WDR R / G / B
4.BRIGHT
5.CONT.
6.COLOUR
7.HUE
8.BLACK OFFSET B-Y
9.SHARP
10.Y-DELAY
11.TINT DVD
12.RGB BLK</td><td>6.VPS
(Do not adjust)</td><td colspan="2">VPS
PDC
WSS
SN</td></tr>
<tr><td>3. AUDIO
(Do not adjust)</td><td>1.DCX0 ADJ.
2. NICAM LOWER ERRLIM
3. NICAM UPPER ERRLIM
4. A2 ID THR</td><td rowspan="2">7.SHIPPING
(Do not adjust)</td><td colspan="2" rowspan="2">ON/OFF</td></tr>
<tr><td>4. DEF.</td><td>1.V-SHIFT
2.V-SLOPE
3.V-SIZE
4.H-CENT
5.H-SIZE
6.TRAPEZ
7.EW-PIN
8.COR-UP
9.COR-LOW
10.ANGLE
11.BOW
12.V-S.CR
13.V-LIN</td></tr>
</table>

3.3 REPLACEMENT OF CHIP COMPONENT

3.3.1 CAUTIONS

(1) Avoid heating for more than 3 seconds.
(2) Do not rub the electrodes and the resist parts of the pattern.
(3) When removing a chip part, melt the solder adequately.
(4) Do not reuse a chip part after removing it.

3.3.2 SOLDERING IRON

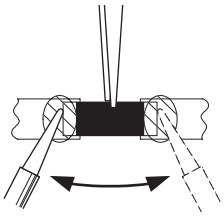
(1) Use a high insulation soldering iron with a thin pointed end of it.
(2) A 30w soldering iron is recommended for easily removing parts.

3.3.3 REPLACEMENT STEPS

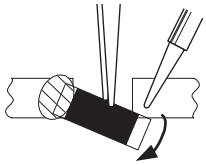
1. How to remove Chip parts

[Resistors, capacitors, etc.]

(1) As shown in the figure, push the part with tweezers and alternately melt the solder at each end.



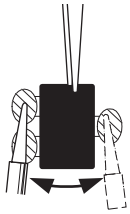
(2) Shift with the tweezers and remove the chip part.



[Transistors, diodes, variable resistors, etc.]

(1) Apply extra solder to each lead.

(2) As shown in the figure, push the part with tweezers and alternately melt the solder at each lead. Shift and remove the chip part.



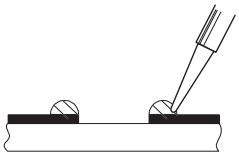
NOTE :

After removing the part, remove remaining solder from the pattern.

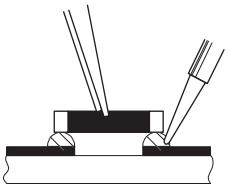
2. How to install Chip parts

[Resistors, capacitors, etc.]

(1) Apply solder to the pattern as indicated in the figure.

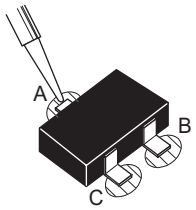


(2) Grasp the chip part with tweezers and place it on the solder. Then heat and melt the solder at both ends of the chip part.

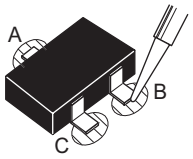


[Transistors, diodes, variable resistors, etc.]

(1) Apply solder to the pattern as indicated in the figure.
(2) Grasp the chip part with tweezers and place it on the solder.
(3) First solder lead **A** as indicated in the figure.



(4) Then solder leads **B** and **C**.



SECTION 4
ADJUSTMENT

4.1 ADJUSTMENT PREPARATION

(1) **There are 2 ways of adjusting this TV : One is with the REMOTE CONTROL UNIT and the other is the conventional method using adjustment parts and components.**
(2) **The adjustment using the REMOTE CONTROL UNIT is made on the basis of the initial setting values. The setting values which adjust the screen to the optimum condition can be different from the initial setting values.**
(3) Make sure that connection is correctly made AC to AC power source.
(4) Turn on the power of the TV and measuring instruments for warning up for at least 30 minutes before starting adjustments.
(5) If the receive or input signal is not specified, use the most appropriate signal for adjustment.
(6) Never touch the parts (such as variable resistors, transformers and condensers) not shown in the adjustment items of this service adjustment.

4.2 PRESET SETTING BEFORE ADJUSTMENT

Unless otherwise specified in the adjustment items, preset the following functions with the REMOTE CONTROL UNIT.

Item	Preset value
PICTURE MODE	STANDARD
CONTRAST / BRIGHT / SHARP / COLOUR / HUE	00
COLOUR TEMP.	NORMAL
AUTO VNR	AUTO
BASS / TREBLE / BALANCE	Centre
SURROUND	OFF
ZOOM	FULL
SLEEP TIMER	OFF

4.3 MEASURING INSTRUMENT AND FIXTURES

(1) DC voltmeter (or digital voltmeter)
(2) Oscilloscope
(3) Signal generator
(Pattern generator : PAL / NTSC)
(4) Remote control unit

4.4 ADJUSTMENT ITEMS

■ CHECK ITEM
- B1 POWERSUPPLY check
- HIGH VOLTAGE check
- IF VCO check

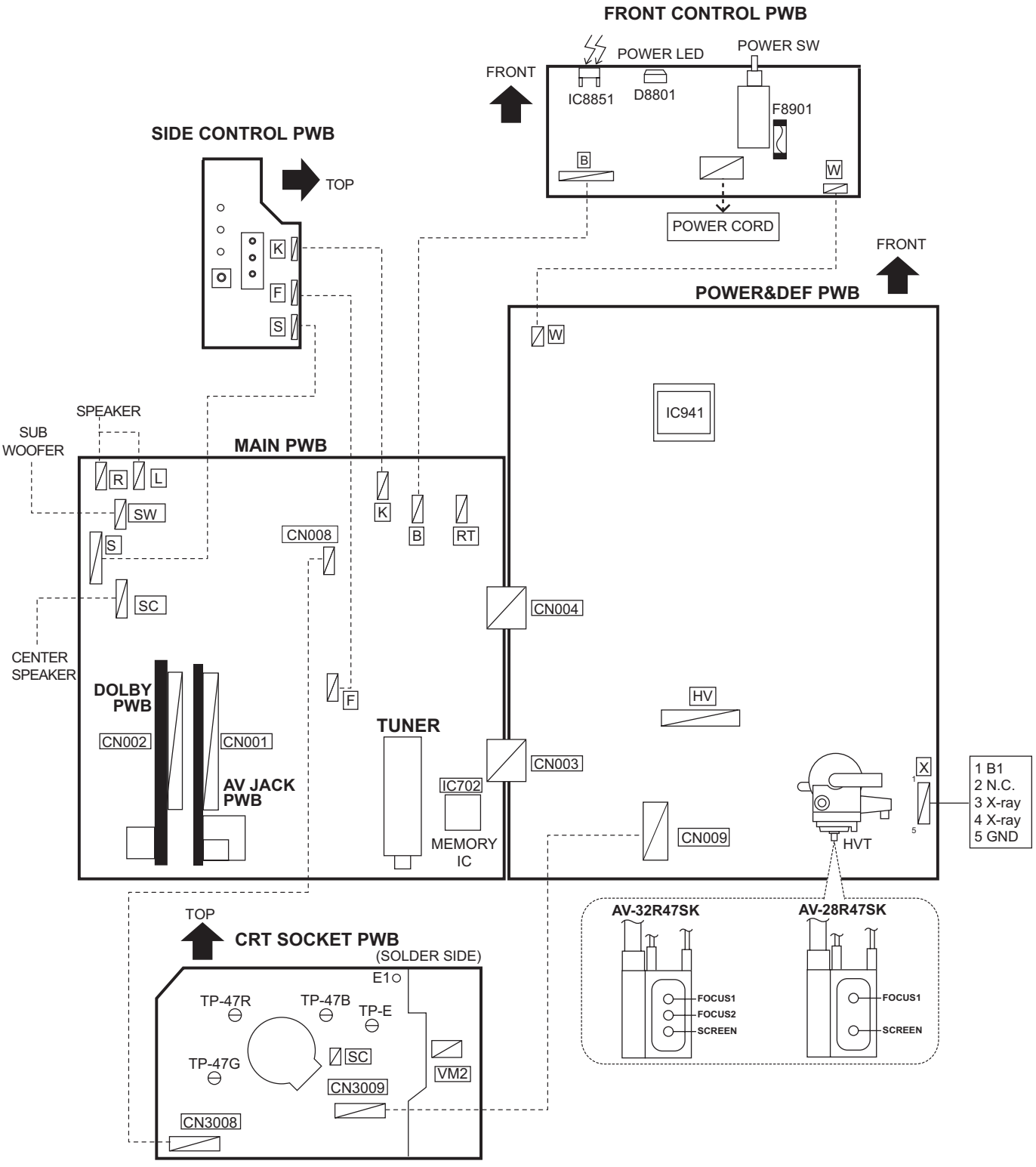
■ FOCUS
- FOCUS adjustment

■ DEFLECTION CIRCUIT
- V. POSITION adjustment
- V. SIZE adjustment
- H. POSITION adjustment
- H. SIZE adjustment
- SIDE-PIN adjustment
- TRAPEZIUM adjustment
- CORNER adjustment
- ANGLE adjustment
- BOW adjustment
- V. S-SHAPE CORRECTION & V.LINEARITY adjustment

■ VIDEO CIRCUIT
- WHITE BALANCE adjustment
- SUB BRIGHT adjustment
- SUB CONTRAST adjustment
- SUB COLOUR-1 adjustment
- SUB COLOUR-2 adjustment
- SUB HUE-1 adjustment
- SUB HUE-2 adjustment

■ VSM PRESET SETTING
- VSM PRESET setting

4.5 ADJUSTMENT LOCATIONS



4.6 BASIC OPERATION OF SERVICE MENU

4.6.1 TOOL OF SERVICE MENU OPERATION

Operate the SERVICE MENU with the REMOTE CONTROL UNIT.

4.6.2 SERVICE MENU ITEMS

With the SERVICE MENU, various adjustments can be made, and they are broadly classified in the following items of settings.

1.IF	This mode adjusts the setting values of the IF circuit.
2.V/C	This mode adjusts the setting values of the VIDEO circuit.
3.AUDIO	This mode adjusts the setting values of the multiplicity AUDIO circuit. **[Do not adjust]**
4.DEF	This mode adjusts the setting values of the DEFLECTION circuit for each aspect mode given below.
5.VSM PRESET	This mode adjusts the initial setting values of COOL, NORMAL and WARM. (VSM : Video Status Memory)
6.VPS	This mode shows the monitor of the VPS, PDC, WSS and SN. **[Do not adjust]**
7.SHIPPING(OFF)	This mode is set at shipping. **[Do not adjust]**

4.6.3 BASIC OPERATION OF SERVICE MENU

(1) HOW TO ENTER SERVICE MENU

Press the [INFORMATION] key and the [MUTING] key of the REMOTE CONTROL UNIT simultaneously, and the SERVICE MENU screen of Fig.1 will be displayed.

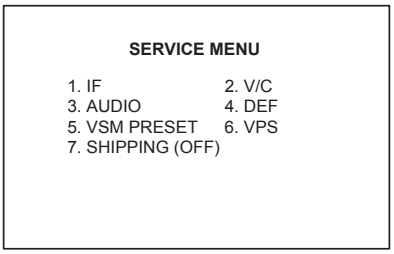


Fig.1

(2) SELECTION OF SUB MENU SCREEN

Press one of [1] - [5] keys of the REMOTE CONTROL UNIT and select the SUB MENU SCREEN (See “SERVICE MENU FLOW CHART”), form the SERVICE MENU.

NAME OF REMOTE CONTROL KEY

Names of key	Key
INFORMATION	
MUTING	
MENU	
FUNCTION UP/DOWN	
FUNCTION -/+	

Fig.2

(3) METHOD OF SETTING

- **1.IF**

[1.VCO] : It must not adjust without signal.

Key	Function
(1) [1]	Select 1.IF
(2) [1]	Select 1.VCO (CW) Make sure that the arrow position between the ABOVE REF and BELOW REF.
(3) [INFORMATION]	Return to the SERVICE MENU screen.

- **2.V/C, 4.DEF AND 5.VSM PRESET.**

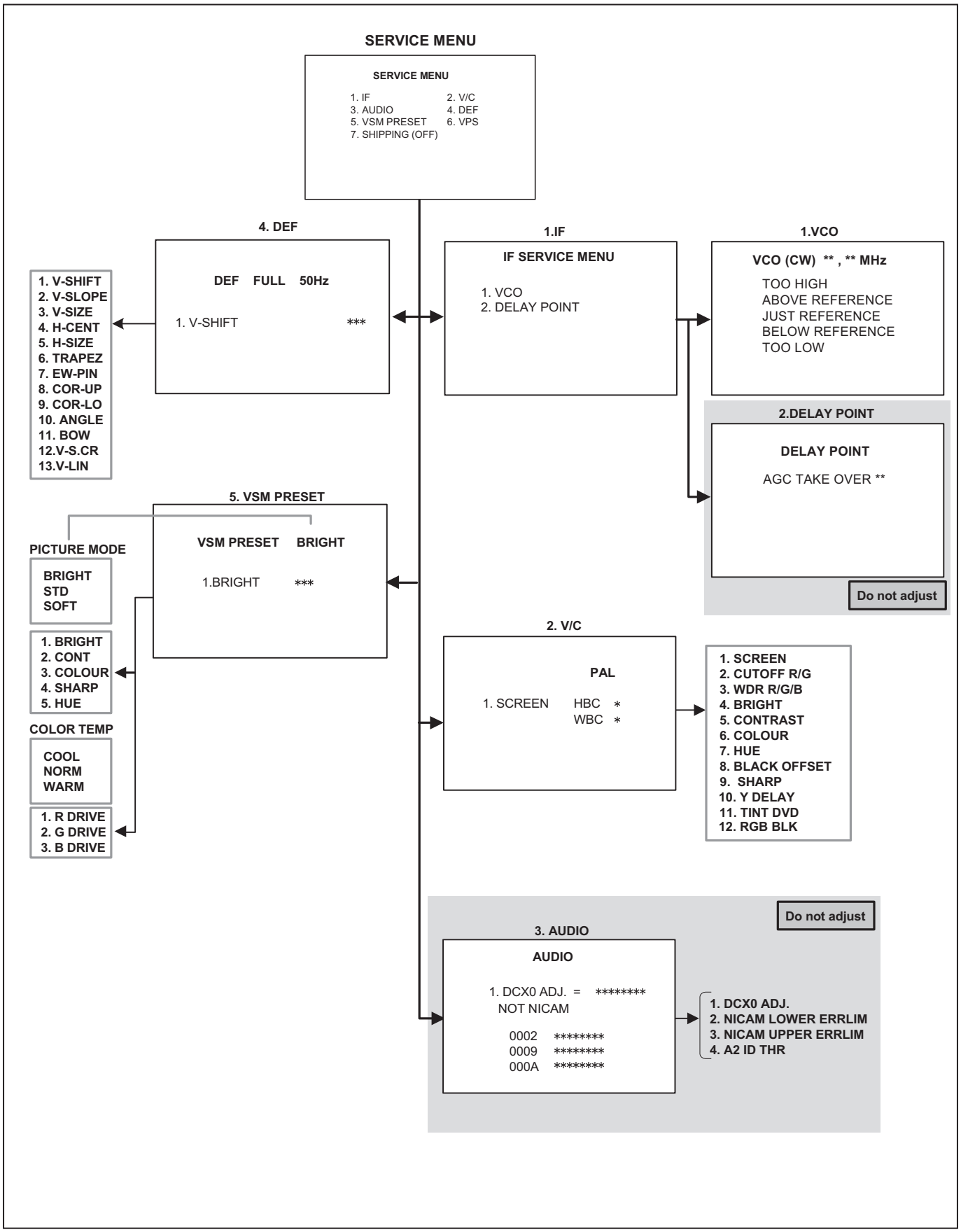
Key	Function
(1) [2] / [3] / [4] / [5]	Select one from 2.V/C, 4.DEF and 5.VSM PRESET.
(2) [FUNCTION UP / DOWN (▲/▼)]	Select setting items.
(3) [FUNCTION -/+ (◀/▶)]	Set (adjust) the setting values of the setting items.
(4) [OK]	Memorize the setting value.(Before storing the setting values in memory, do not press the CH, TV, POWER key if you do, the values will not be stored in memory.)
(5) [INFORMATION]	Return to the SERVICE MENU screen.

- **3.AUDIO, 6.VPS, and 7.SHIPPING.**
  [Do not setting]

(4) RELEASE OF SERVICE MENU

After completing the setting, return to the SERVICE MENU, then again press the [INFORMATION] key.

4.6.4 SERVICE MENU FLOW CHART



4.7 INITIAL SETTING VALUE OF SERVICE MENU

(1) Adjustment of the SERVICE MENU is made on the basis of the initial setting values. However, the new setting values which displays on the screen in its optimum condition may differ from the initial setting value.
(2) Do not change the initial setting values of the items not listed in “ADJUSTMENT PROCEDURE”.
(3) “---” is impossible to adjust or not requirement to adjustment.

4.7.1 [2. V/C]

Setting item		Variable range	Setting value			
			PAL	NTSC	NTSC4.43	RGB
2. CUT OFF	RED	-63~+63	0	0	0	0
	GREEN	-63~+63	0	0	0	0
3. WDR	RED	-63~+63	0	0	0	0
	GREEN	-63~+63	0	0	0	0
	BLUE	-63~+63	0	0	0	0
4. BRIGHT		-63~+63	0	0	0	0
5. CONTRAST		-63~+63	-10	-10	-10	0
6. COLOUR		-63~+63	0	0	0	0
7. HUE		-63~+63	---	0	0	---
8. BLACK OFFSET	B-Y	0~3	---	---	---	---

Setting item	Variable range	Setting value						
		PAL		NTSC		NTSC4.43		RGB
		RF	VIDEO	RF	VIDEO	RF	VIDEO	
9. SHARP	-63~+63	+5	+5	+5	+5	+5	+5	+5

Setting item	Variable range	Setting value									
		PAL			NTSC			NTSC4.43			RGB
		RF	VIDEO	S-VIDEO	RF	VIDEO	S-VIDEO	RF	VIDEO	S-VIDEO	
10. Y DELAY	-63~+63	+5	+5	+5	+5	+5	+5	+5	+5	+5	+5

Setting item	Variable range	Setting value			
		PAL	NTSC	NTSC4.43	RGB
11. TINT DVD	-63~+63	0	0	0	0
12. RGB BLK	---	---	---	---	---

4.7.2 [3. AUDIO] [Do not adjust]

Setting item	Variable range	Setting value
1. DCXO ADJ.	---	F0
2. NICAM LOWER ERRLIM	00H~FFH	6F
3. NICAM UPPER ERRLIM	00H~FFH	E0
4. A2 ID THR	00H~FFH	00

4.7.3 [4. DEF]

Setting item	Variable range	Setting value											
		FULL		PANORAMIC		SUBTITLE		14:9 ZOOM		REGULAR		COMPRESS	
		50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz
1.V-SHIFT	-32~+31	±0	+3	+3	±0	-12	±0	±0	±0	±0	±0	±0	±0
2.V-SLOPE	-32~+31	±0	±0	±0	±0	-4	±0	±0	±0	±0	±0	±0	±0
3.V-SIZE	-32~+31	±0	-1	+5	±0	+20	±0	+14	±0	±0	±0	-32	±0
4.H-CENT	-32~+31	+8	5	-2	±0	±0	±0	±0	±0	±0	±0	+11	±0
5.H-SIZE	-32~+31	+18	±0	+9	±0	±0	±0	±0	±0	±0	±0	±0	±0
6.TRAPEZ	-32~+31	-4	±0	±0	±0	+2	±0	±0	±0	±0	±0	±0	±0
7.EW-PIN	-32~+31	-15	±0	±0	±0	±0	±0	±0	±0	±0	±0	±0	±0
8.COR-UP	-32~+31	±0	±0	±0	±0	±0	±0	±0	±0	±0	±0	±0	±0
9.COR-LO	-32~+31	±0	±0	±0	±0	+7	±0	±0	±0	±0	±0	±0	±0
10.ANGLE	-32~+31	±0	±0	±0	±0	±0	±0	±0	±0	±0	±0	±0	±0
11.BOW	-32~+31	±0	±0	±0	±0	±0	±0	±0	±0	±0	±0	±0	±0
12.V.S-COR	-32~+31	-14	±0	+10	±0	+4	±0	±0	±0	±0	±0	±0	±0
13.V.LIN	-32~+31	+3	±0	+6	±0	+8	±0	±0	±0	±0	±0	±0	±0

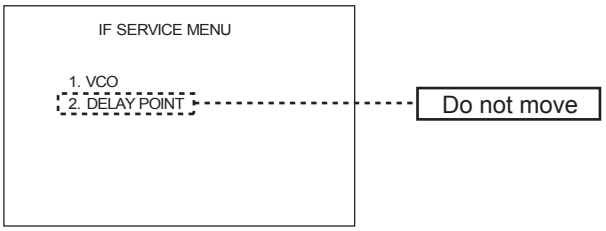
4.7.4 [5. VSM PRESET]

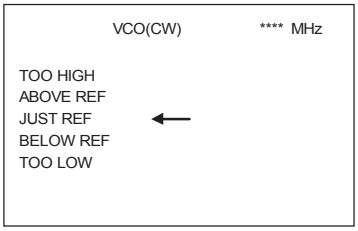
Item	Variable range	Setting value					
		PICTURE MODE			COLOUR TEMP.		
		BRIGHT	STANDARD	SOFT	COOL	NORMAL	WARM
1.BRIGHT	-16~+16	+0	+0	+0	---	---	---
2.CONT	-16~+16	+12	+10	+2	---	---	---
3.COLOUR	-16~+16	+6	+0	-2	---	---	---
4.SHARP	-16~+16	+0	+0	-2	---	---	---
5.HUE	-16~+16	+0	+0	+0	---	---	---
1.R DRIVE	-64~+64	---	---	---	-8	+7	+0
2.G DRIVE	-64~+64	---	---	---	+0	+0	+0
3.B DRIVE	-64~+64	---	---	---	+9	-6	+0

4.8 ADJUSTMENT PROCEDURE

4.8.1 CHECK ITEM

Item	Measuring instrument	Test point	Adjustment part	Description
B1 POWER SUPPLY check	Signal generator DC voltmeter Remote control unit	X connector TP-91(B1) TP-E [POWER DEF PWB]	[2.V/C] 12.RGB BLK	(1) Receive the any broadcast. (2) Select 2. V/C from the SERVICE MENU. (3) Select < 12. RGB BLK >. (4) Press the [FUNCTION + (▸)] key to find the cut off screen (Black screen). (5) Connect a DC voltmeter to TP-91(B1) and TP-E. (6) Make sure that the voltage is DC143V ± 2.0V. (7) Press the [FUNCTION - (◂)] key to return to service menu.
HIGH VOLTAGE check	Signal generator HV voltmeter Remote control unit	CRT anode Chassis GND	[2.V/C] 12.RGB BLK	(1) Receive the any broadcast. (2) Select 2. V/C from the SERVICE MENU. (3) Select < 12. RGB BLK >. (4) Press the [FUNCTION + (▸)] key to find the cut off screen (Black screen). (5) Connect a HV voltmeter to CRT ANODE and chassis GND. (A ground side is connected previously) (6) Make sure that the voltage is DC 31.0kV (+1kV / -1.5kV). (7) Press the [FUNCTION - (◂)] key to return to service menu. **NOTE:** When removing a prove, an anode side is removed previously.
IF VCO check	Remote control unit		[1.IF] 1.VCO	• Under normal conditions, no adjustment is required. • It must not adjust without broadcast signal. (1) Receive the any broadcast. (2) Select 1.IF from the SERVICE MENU. (3) Select < 1.VCO >. (4) Check the ←(arrow) position between the ABOVE REF. and BELOW REF.





4.8.2 FOCUS

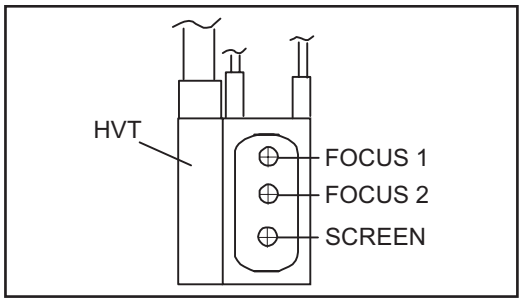
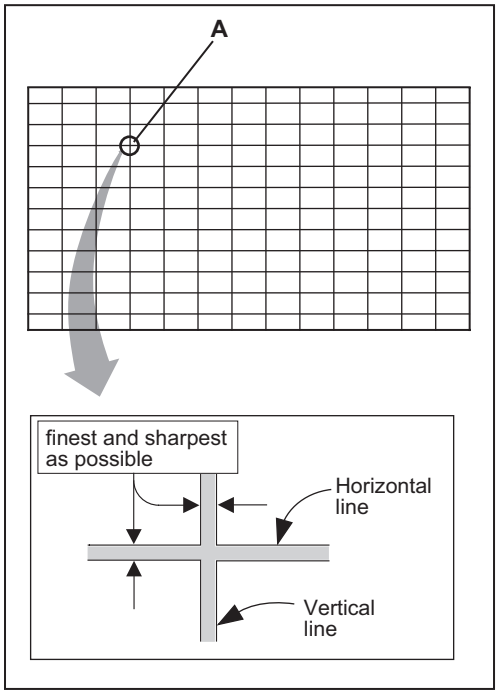
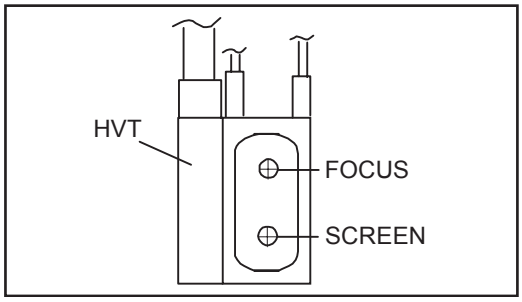
<table>
<tr><th>Item</th><th>Measuring instrument</th><th>Test point</th><th>Adjustment part</th><th>Description</th></tr>
<tr><td>FOCUS
[AV-32R47SK]</td><td>Signal generator</td><td></td><td>FOCUS 1 VR
FOCUS 2 VR
[In HVT]</td><td rowspan="2">(1) Receive the crosshatch signal.
(2) Set the ZOOM mode to FULL.
(3) By turning the FOCUS 2 VR, adjust the picture so that the A part vertical line may become thinnest (Fig.1) .
(4) By turning the FOCUS 1 VR, adjust the picture so that the A part horizontal line may become uniform at the line centre and its periphery (Fig.1) .
(5) Make sure that when the screen is darkened, the lines remain in good focus.
 
</td></tr>
<tr><td colspan="4"> 

Fig.1</td></tr>
<tr><td>FOCUS
[AV-28R47SK]</td><td>Signal generator</td><td></td><td>FOCUS VR
[In HVT]</td><td>(1) Receive the crosshatch signal.
(2) Set the ZOOM mode to FULL.
(3) While looking at the screen, adjust the FOCUS VR to the vertical and horizontal lines will be clear and infine detail.
(4) Make sure that the picture is in focus even when the screen gets darkened.
 
</td></tr>
</table>

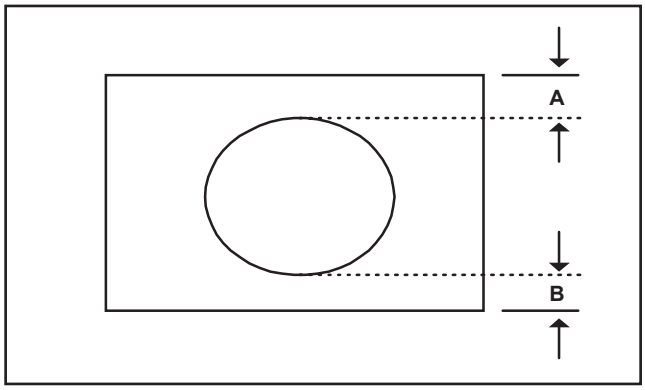
4.8.3 DEFLECTION CIRCUIT

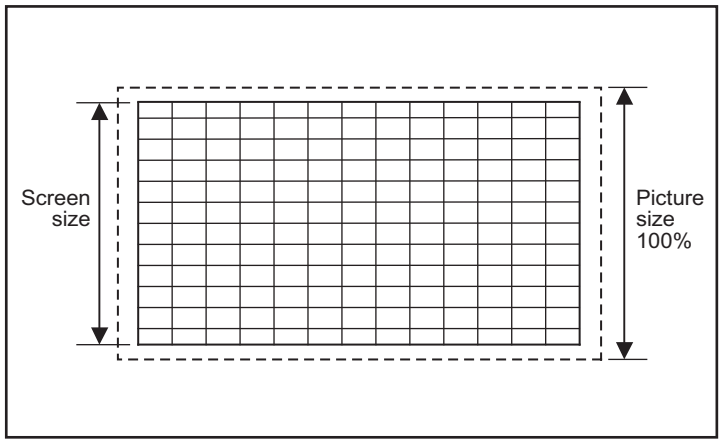
There are 6 aspect modes (1.FULL, 2.PANORAMIC, 3.SUBTITLE, 4.14:9 ZOOM 5.REGULAR 6.COMPRESS) of the adjustment. Depending upon the kind of signals.

NOTE :

- At first the adjustment in 50Hz FULL mode should be done, then the data for the other aspect mode is corrected in the respective value at the same time. And confirm the deflection adjustment initial setting value in 60Hz (NTSC EXT mode) FULL mode. If the adjustment in 50Hz each aspect mode has been done and stored, the data for the same aspect modes in 60Hz is corrected in the respective value. Only the data for the other aspect mode in 60Hz is corrected for itself.

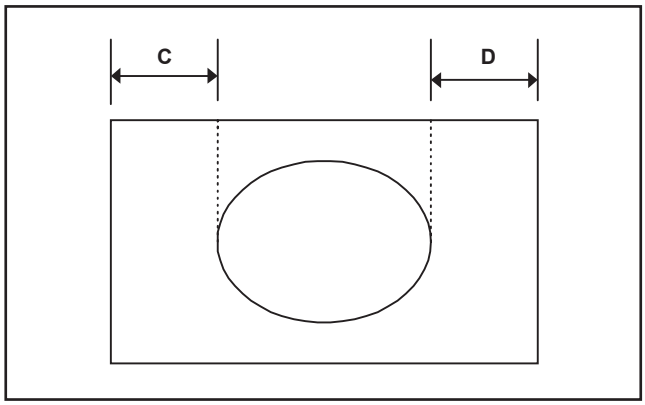
<table>
<tr><th>Item</th><th>Measuring instrument</th><th>Test point</th><th>Adjustment part</th><th>Description</th></tr>
<tr><td>V. POSITION</td><td>Signal generator

Remote control unit</td><td></td><td>[4.DEF]
1.V- SHIFT</td><td rowspan="2">(1) Receive the circle pattern signal of vertical frequency 50Hz (PAL / SECAM).
(2) Set the ZOOM mode to FULL.
(3) Select 4.DEF from the SERVICE MENU.
(4) Select < 1.V-SHIFT >.
(5) Set the initial setting value of < 1.V-SHIFT >.
(6) Adjust vertical position to make A = B.
(7) Check the adjustment value above in other zoom mode. If it is a wrong adjustment, re-adjust in FULL mode and adjust by < 1.V-SHIFT >.
(8) Press the [MENU] key and memorize the set value.</td></tr>
<tr><td colspan="4"> 
</td></tr>
<tr><td>V. SIZE</td><td>Signal generator

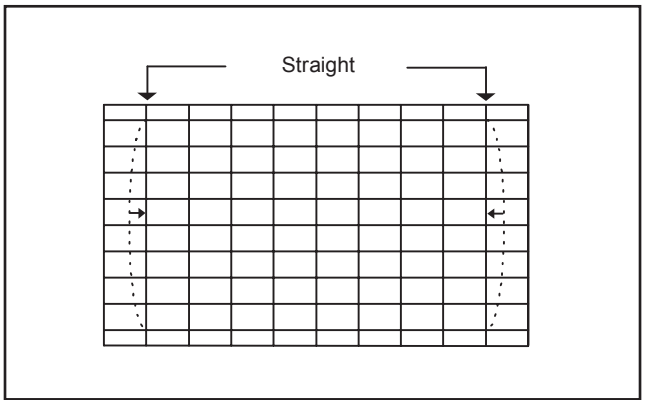
Remote control unit</td><td></td><td>[4.DEF]
3.V-SIZE</td><td rowspan="2">(1) Receive the crosshatch signal.
(2) Set the ZOOM mode to FULL.
(3) Select 4.DEF from the SERVICE MENU.
(4) Select < 3.V-SIZE >.
(5) Set the initial setting value of < 3.V-SIZE >.
(6) Adjust to make sure that the vertical screen size of the picture size is in the bellow table.
(7) Make sure that the vertical screen size of the each ASPECT mode is in the below table.
(8) Press the [MENU] key and memorize the set value.
(9) Input a NTSC VIDEO signal (60Hz) from the EXT terminal, and make sure that the vertical screen size is in the table below.
(10) Press the [MENU] key and memorize the set value.</td></tr>
<tr><td colspan="4"> 

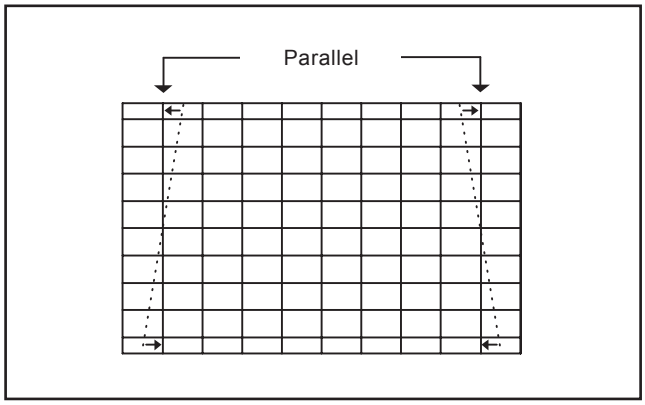
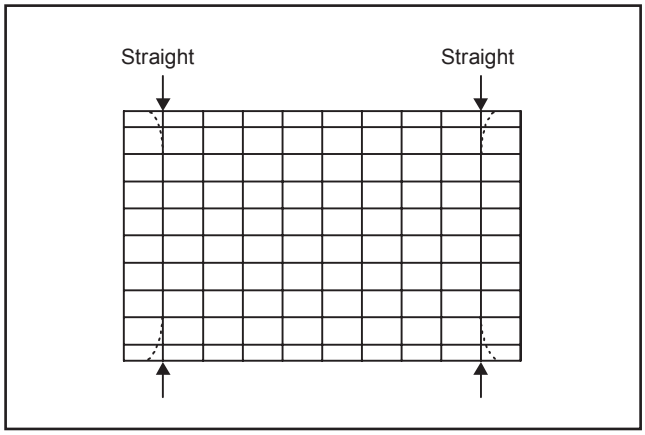
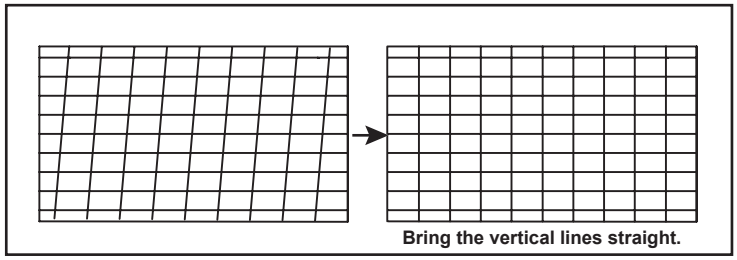
[SCREEN SIZE]
<table>
<tr><th>ASPECT MODE</th><th>FULL</th><th>PANORAMIC</th><th>SUBTITLE</th><th>14:9 ZOOM</th><th>REGULAR</th></tr>
<tr><td>SCREEN TOP</td><td>92%</td><td>87%</td><td>70%</td><td>80%</td><td>92%</td></tr>
<tr><td>SCREEN BOTTOM</td><td>92%</td><td>87%</td><td>83%</td><td>80%</td><td>92%</td></tr>
</table></td></tr>
</table>

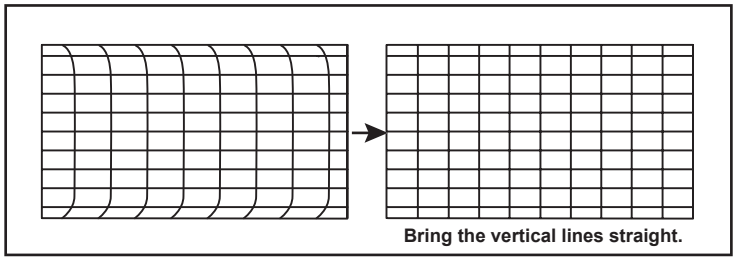
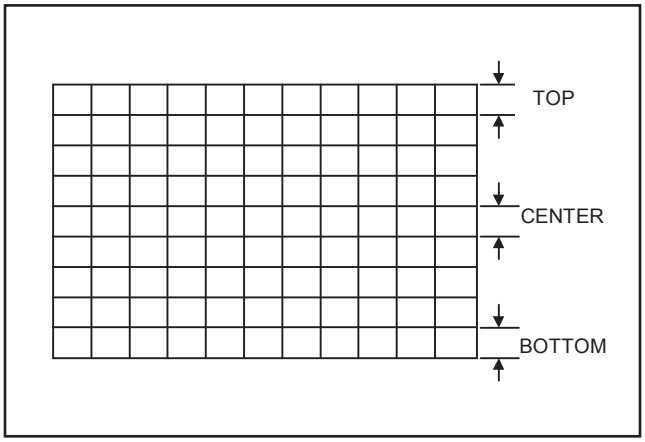
<table>
<tr><th>Item</th><th>Measuring instrument</th><th>Test point</th><th>Adjustment part</th><th>Description</th></tr>
<tr><td>H. POSITION</td><td>Signal generator

Remote control unit</td><td></td><td>[4.DEF]
4.H-CENT</td><td rowspan="2">(1) Receive the circle pattern signal.
(2) Set the ZOOM mode to FULL.
(3) Select 4.DEF from the SERVICE MENU.
(4) Select < 4.H-CENT >.
(5) Set the initial setting value of < 4.H-CENT >.
(6) Adjust horizontal position to make C=D.
(7) Press the [MENU] key and memorize the set value.</td></tr>
<tr><td colspan="4"> 
</td></tr>
<tr><td>H. SIZE</td><td>Signal generator

Remote control unit</td><td></td><td>[4.DEF]
5.H-SIZE</td><td rowspan="2">(1) Receive the circle pattern signal.
(2) Set the ZOOM mode to FULL.
(3) Select 4.DEF from the SERVICE MENU.
(4) Select < 5.H-SIZE >.
(5) Set the initial setting value of < 5.H-SIZE >.
(6) Adjust to make sure that the horizontal screen size of the picture size is in the bellow table.
(7) Make sure that the horizontal screen size of the each ASPECT mode is in the below table.
(8) Press the [MENU] key and memorize the set value.
NOTE :
14 : 9 ZOOM and REGULAR are length of 90%.
The value in ( ) shows NTSC adjustment value.</td></tr>
<tr><td colspan="4">[SCREEN SIZE]
<table>
<tr><th>MODE</th><th>FULL</th><th>PANORAMIC</th><th>SUBTITLE</th><th>14:9 ZOOM</th><th>REGULAR</th></tr>
<tr><td>28inch</td><td>91%</td><td>95% (94%)</td><td>92%</td><td>570mm</td><td>510mm</td></tr>
<tr><td>32inch</td><td>91%</td><td>95% (94%)</td><td>92%</td><td>495mm</td><td>450mm</td></tr>
</table></td></tr>
<tr><td>SIDE-PIN</td><td>Signal generator

Remote control unit</td><td></td><td>[4.DEF]
7.EW-PIN</td><td rowspan="2">(1) Receive the crosshatch signal.
(2) Set the ZOOM mode to FULL.
(3) Select 4.DEF from the SERVICE MENU.
(4) Select < 7.EW-PIN >.
(5) Set the initial setting value of < 7.EW-PIN >.
(6) Adjust to make the 2nd vertical lines at the left and right edges of the screen straight. Also make sure that the 3rd vertical lines are straight.
(7) Press the [MENU] key and memorize the set value.</td></tr>
<tr><td colspan="4"> 
</td></tr>
</table>

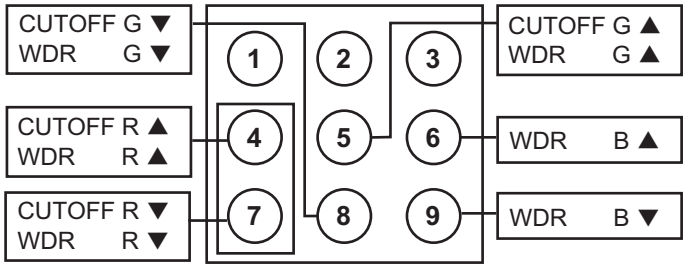
Item	Measuring instrument	Test point	Adjustment part	Description
TRAPEZIUM	Signal generator Remote control unit		[4.DEF] 6.TRAPEZ	(1) Receive the crosshatch signal. (2) Set the ZOOM mode to FULL. (3) Select 4.DEF from the SERVICE MENU. (4) Select < 6.TRAPEZ >. (5) Set the initial setting value of < 6.TRAPEZ >. (6) Adjust to bring the vertical lines at the right and left edges of the screen parallel. (7) Press the [MENU] key and memorize the set value.
				
CORNER	Signal generator Remote control unit		[4.DEF] 8.COR-UP 9.COR-LO	(1) Receive the crosshatch signal. (2) Set the ZOOM mode to FULL. (3) Select 4.DEF from the SERVICE MENU. (4) Select < 8.COR-UP >. (5) Set the initial setting value of < 8.COR-UP >. (6) Adjust to bring the straight line at the upper corner. (7) Select < 9.COR-LO >. (8) Set the initial setting value of < 9.COR-LO >. (9) Adjust to bring the straight line at the low corner. (10) Press the [MENU] key and memorize the set value.
				
ANGLE	Signal generator Remote control unit		[4.DEF] 10. ANGLE	• In case where there is a parallelogrammical distortion of images on the screen. (1) Receive the crosshatch signal. (2) Set the ZOOM mode to FULL. (3) Select 4.DEF from the SERVICE MENU. (4) Select < 10.ANGLE >. (5) Set the initial setting value of < 10. ANGLE >. (6) Adjust to bring the vertical lines straight. (7) Press the [MENU] key and memorize the set value.
				

Item	Measuring instrument	Test point	Adjustment part	Description
BOW	Signal generator Remote control unit		[4.DEF] 11.BOW	• In case where there is a bow-shaped distortion of images on the screen. (1) Receive the crosshatch signal. (2) Set the ZOOM mode to FULL. (3) Select 4.DEF from the SERVICE MENU. (4) Select < 11.BOW >. (5) Set the initial setting value of < 11. BOW >. (6) Adjust to bring the vertical lines straight. (7) Press the [MENU] key and memorize the set value.
				
V. S-SHAPE CORRECTION & V. LINEARITY	Signal generator Remote control unit		[4.DEF] 12.V-S.CR 13.V-LIN	• When the vertical linearity has been deteriorated remarkably, perform the following steps. (1) Receive the crosshatch signal. (2) Set the ZOOM mode to FULL. (3) Select 4.DEF from the SERVICE MENU. (4) Select < 13.V-LIN >. (5) Set the initial setting value of < 13.V-LIN >. (6) Select < 12.V-S.COR >. (7) Set the initial setting value of < 12.V-S.COR >. (8) Adjust < 13.V-LIN > and < 12.V-S.COR > so that the spaces of each line on top, center and bottom become uniform. (9) Press the [MENU] key and memorize the set value.
				

4.8.4 VIDEO CIRCUIT

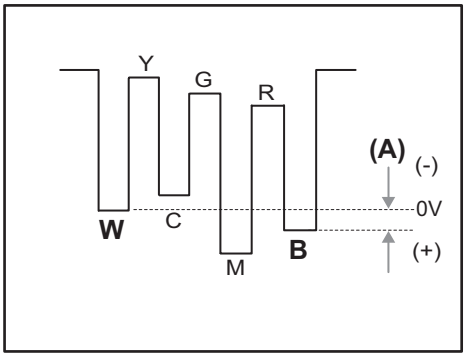
<table>
<tr><th>Item</th><th>Measuring instrument</th><th>Test point</th><th>Adjustment part</th><th>Description</th></tr>
<tr><td>WHITE BALANCE</td><td>Signal generator

Remote control unit</td><td></td><td>[2. V/C]
2.CUTOFF R / G
3.WDR R / G / B</td><td rowspan="2">(1) Receive the black and white signal (colour off).
(2) Set the ZOOM mode to FULL.
(3) Set the PICTURE mode to STD.
(4) Set the COLURTEMP. to NORMAL.
(5) Select 2.V/C from the SERVICE MENU.
(6) Select < 2.CUTOFF >.
(7) Each select (R), (G) and adjust the screen until the black portion in the screen becomes black.
(8) Select < 3.WDR >.
(9) Each select (R), (G), (B) and adjust the screen until the white portion in the screen becomes white.

NOTE:
Do not adjust < 3. WDR G >.
(10) Press the [MENU] key and memorize the set value.
(11) Change the contrast and brightness from low-light to high-light and check that the tracking of the white balance is good.</td></tr>
<tr><td colspan="4">REMOTE CONTROL UNIT KEY
 
</td></tr>
<tr><td>SUB BRIGHT</td><td>Remote control unit</td><td></td><td>[2. V/C]
4. BRIGHT</td><td>(1) Receive the any broadcast.
(2) Set the ZOOM mode to FULL.
(3) Set the PICTURE mode to STD.
(4) Select 2.V/C from the SERVICE MENU.
(5) Select < 4.BRIGHT >.
(6) Set the initial setting value of < 4.BRIGHT >.
(7) If the brightness is not the best with the initial setting value, make fine adjustment until you get the best brightness.
(8) Press the [MENU] key and memorize the set value.</td></tr>
<tr><td>SUB CONTRAST</td><td>Remote control unit</td><td></td><td>[2. V/C]
5. CONT.</td><td>(1) Receive the any broadcast.
(2) Set the ZOOM mode to FULL.
(3) Set the PICTURE mode to STD.
(4) Select 2.V/C from the SERVICE MENU.
(5) Select < 5.CONT >.
(6) Set the initial setting value of < 5.CONT >.
(7) If the contrast is not the best with the initial setting value, make fine adjustment until you get the best contrast.
(8) Press the [MENU] key and memorize the set value.</td></tr>
<tr><td>SUB COLOUR-1</td><td>Remote control unit</td><td></td><td>[2.V/C]
6.COLOUR
(PAL/NTSC)</td><td>[Method of adjustment without measuring instrument]
PAL COLOUR
(1) Receive PAL broadcast.
(2) Set the ZOOM mode to FULL.
(3) Set the PICTURE mode to STD.
(4) Select 2.V/C from the SERVICE MENU.
(5) Select < 6.COLOUR >.
(6) Set the initial setting value of < 6.COLOUR >.
(7) If the colour is not the best with the initial set value, make fine adjustment until you get the best colour.
(8) Press the [MENU] key and memorize the set value.
NTSC 3.58 COLOUR
(1) Input the NTSC 3.58MHz signal from the EXT terminal.
(2) Make similar fine adjustment of NTSC 3.58 COLOUR in the same manner as for above.
NTSC 4.43 COLOUR
(1) When NTSC 3.58 COLOUR set, NTSC 4.43 COLOUR will automatically set.</td></tr>
</table>

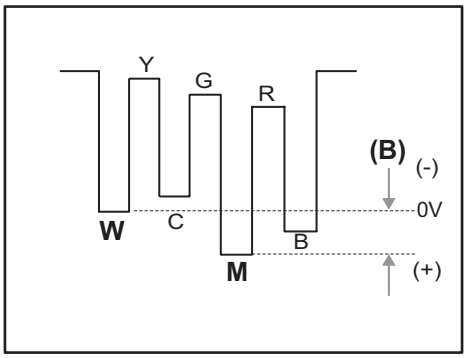
<table>
<tr><th>Item</th><th>Measuring instrument</th><th>Test point</th><th>Adjustment part</th><th>Description</th></tr>
<tr><td>SUB COLOUR-2</td><td>Signal generator

Oscilloscope

Remote control unit</td><td>TP-47B
TP-E
[CRT SOCKET PWB]</td><td>[2.V/C]
6.COLOUR
(PAL/NTSC)</td><td rowspan="2">[Method of adjustment using measuring instrument]
PAL COLOUR
(1) Receive the PAL full field colour bar signal (75% white).
(2) Set the ZOOM mode to FULL.
(3) Set the PICTURE mode to STD.
(4) Select 2.V/C from the SERVICE MENU.
(5) Select < 6.COLOUR >.
(6) Set the initial setting value of < 6.COLOUR >.
(7) Connect the oscilloscope between TP-47B and TP-E.
(8) Adjust PAL COLOUR and bring the value of (A) in the illustration to the values as shown given billow (Voltage difference between white (W) and blue (B)).
(9) Press the [MENU] key and memorize the set value.
NTSC 3.58 COLOUR
(1) Input the NTSC 3.58MHz signal (full field colour bar with 75% white) from the EXT terminal.
(2) Set the initial setting value of NTSC 3.58 COLOUR.
(3) Adjust NTSC 3.58 COLOUR and bring the value of (A) in the illustration to the values as shown given billow (Voltage difference between white (W) and blue (B)).
(4) Press the [MENU] key and memorize the set value.
NTSC 4.43 COLOUR
(1) When NTSC 3.58 COLOUR set, NTSC 4.43 COLOUR will automatically set.</td></tr>
<tr><td colspan="3"> 

[PAL COLOUR VOLTAGE SETTING]
<table>
<tr><th></th><th>Voltage setting</th></tr>
<tr><td>VOLTAGE (W-B)</td><td>+2V</td></tr>
</table>
[NTSC COLOUR VOLTAGE SETTING]
<table>
<tr><th></th><th>Voltage setting</th></tr>
<tr><td>VOLTAGE (W-B)</td><td>+2V</td></tr>
</table></td></tr>
<tr><td>SUB HUE-1</td><td>Remote control unit</td><td></td><td>[2.V/C]
7.HUE</td><td>[Method of adjustment without measuring instrument]
NTSC 3.58
(1) Input the NTSC 3.58MHz COMPOSITE VIDEO signal (full field colour bar with 75% white) from the EXT terminal.
(2) Set the ZOOM mode to FULL.
(3) Set the PICTURE mode to STD.
(4) Select 2.V/C from the SERVICE MENU.
(5) Select < 7. HUE >.
(6) Set the initial setting value of < 7. HUE >.
(7) If you cannot get the best hue with the initial setting value, make fine adjustment until you get the best hue.
(8) Press the [MENU] key and memorize the set value.
NTSC 4.43
(1) When NTSC 3.58 is set, NTSC 4.43 will be automatically set at the respective values.</td></tr>
</table>

Item	Measuring instrument	Test point	Adjustment part	Description
SUB HUE-2	Signal generator Oscilloscope Remote control unit	TP-47B TP-E [CRT SOCKET PWB]	[2.V/C] 7.HUE	**[Method of adjustment using measuring instrument]** **NTSC 3.58 HUE** (1) Input the NTSC 3.58MHz signal (full field colour bar with 75% white) from the EXT terminal. (2) Set the ZOOM mode to FULL. (3) Set the PICTURE mode to STD. (4) Select 2.V/C from the SERVICE MENU. (5) Select < 7. HUE >. (6) Set the initial setting value of < 7. HUE >. (7) Connect the oscilloscope between TP-47B and TP-E. (8) Adjust < 7. HUE > to bring the value of (B) in the illustration to the values as shown given billow (voltage difference between white (W) and magenta (M)). (9) Press the [MENU] key and memorize the set value. **NTSC 4.43 HUE** (1) When NTSC 3.58 COLOUR set, NTSC 4.43 COLOUR will automatically set.



[VOLTAGE SETTING]

	Voltage setting
VOLTAGE (W-M)	-3V

4.8.5 VSM PRESET SETTING

Item	Measuring instrument	Test point	Adjustment part	Description
VSM PRESET	Remote control unit		[5.VSM PRESET] (BRIGHT/STD/SOFT) 1. BRIGHT 2. CONT. 3. COLOUR 4. SHARP 5. HUE (COOL/WARM/NORMAL) 1. R DRIVE 2. G DRIVE 3. B DRIVE	(1) Set the ZOOM mode to FULL. (2) Select 5.VSM PRESET from the SERVICE MENU. (3) Press the [MENU] key, and set the PICTURE MODE to BRIGHT. (4) Adjust the [FUNCTION UP/DOWN] and [-/+] key to bring the set values of 1.BRIGHT to 5. HUE to the values shown in the [5. VSM PRESET]. (5) Press the [MENU] key, and set the PICTURE MODE to STD. (6) Make similar adjustment as in 3 above. (7) Press the [MENU] key, and set the PICTURE MODE to SOFT. (8) Make similar adjustment as in 3 above. (9) Press the [MENU] key, and set the COLOUR TEMP to COOL. (10) Adjust the [FUNCTION UP/DOWN] and [-/+] key to bring the set values of 1. R DRIVE to 3. B DRIVE to the values shown in the table. (11) Press the [MENU] key, and set the COLOUR TEMP to WARM. (12) Make similar adjustment as in 9 above. (13) Press the [MENU] key, and set the COLOUR TEMP to NORMAL. (14) Make similar adjustment as in 9 above.

SECTION 5
TROUBLE SHOOTING

This service manual does not describe TROUBLE SHOOTING.

JVC
VICTOR COMPANY OF JAPAN, LIMITED
AV & MULTIMEDIA COMPANY VIDEO DISPLAY CATEGORY 12, 3-chome, Moriya-cho, kanagawa-ku, Yokohama, kanagawa-prefecture, 221-8528, Japan

(No.YA061)

Printed in Japan
WPC